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PATENT & TRADEMARK OFFICE
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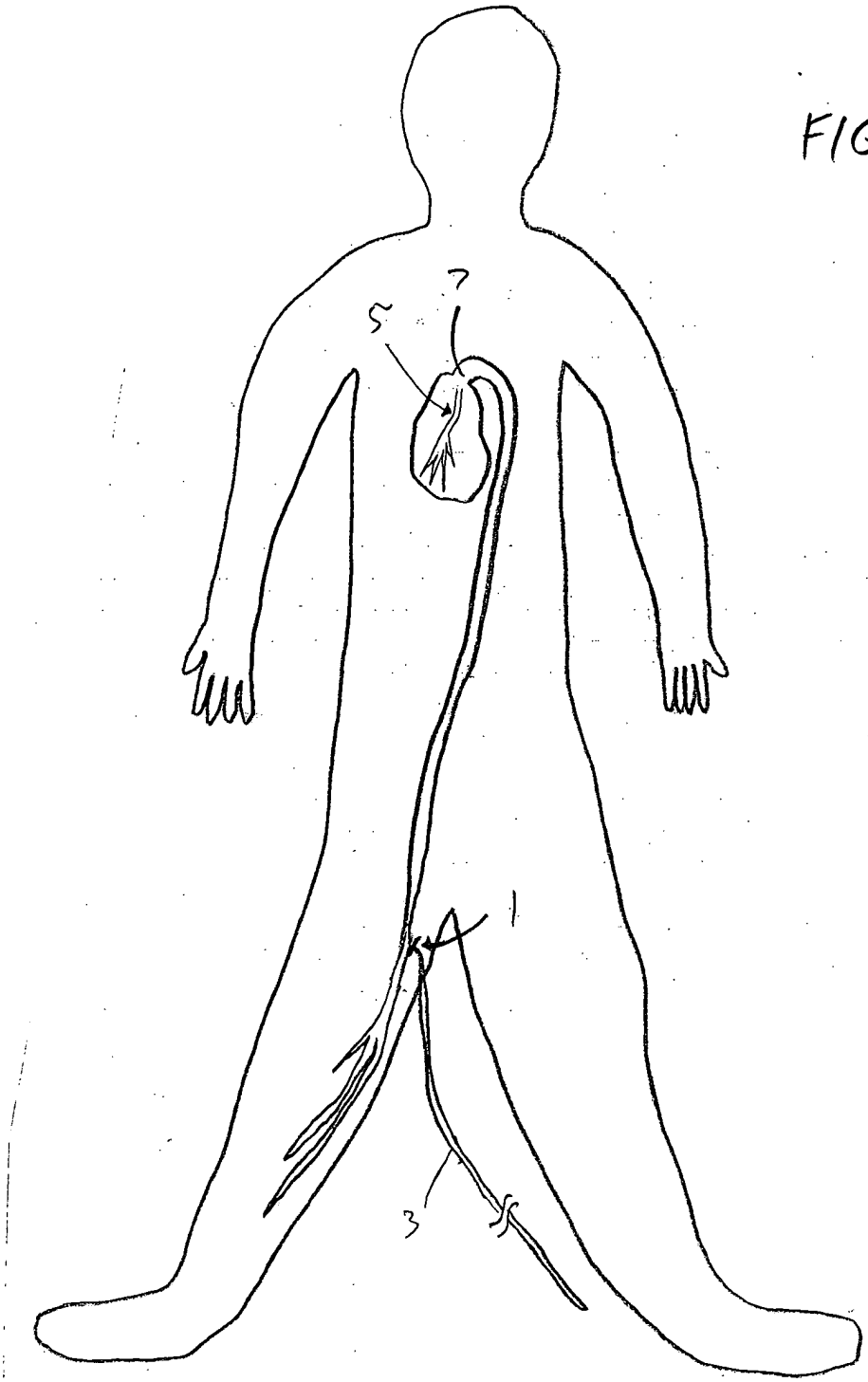
FIG. 1



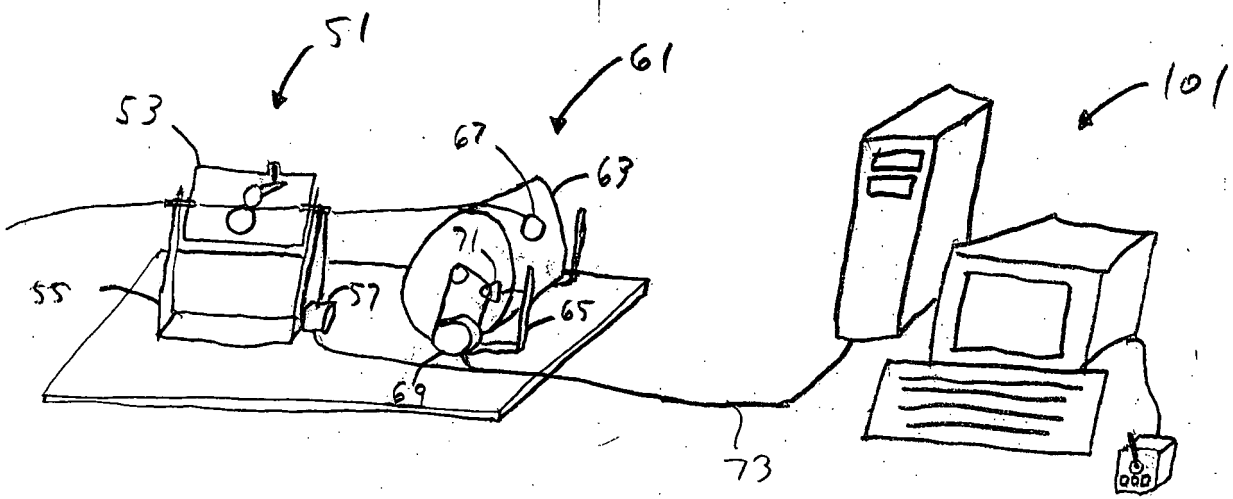


FIG. 2

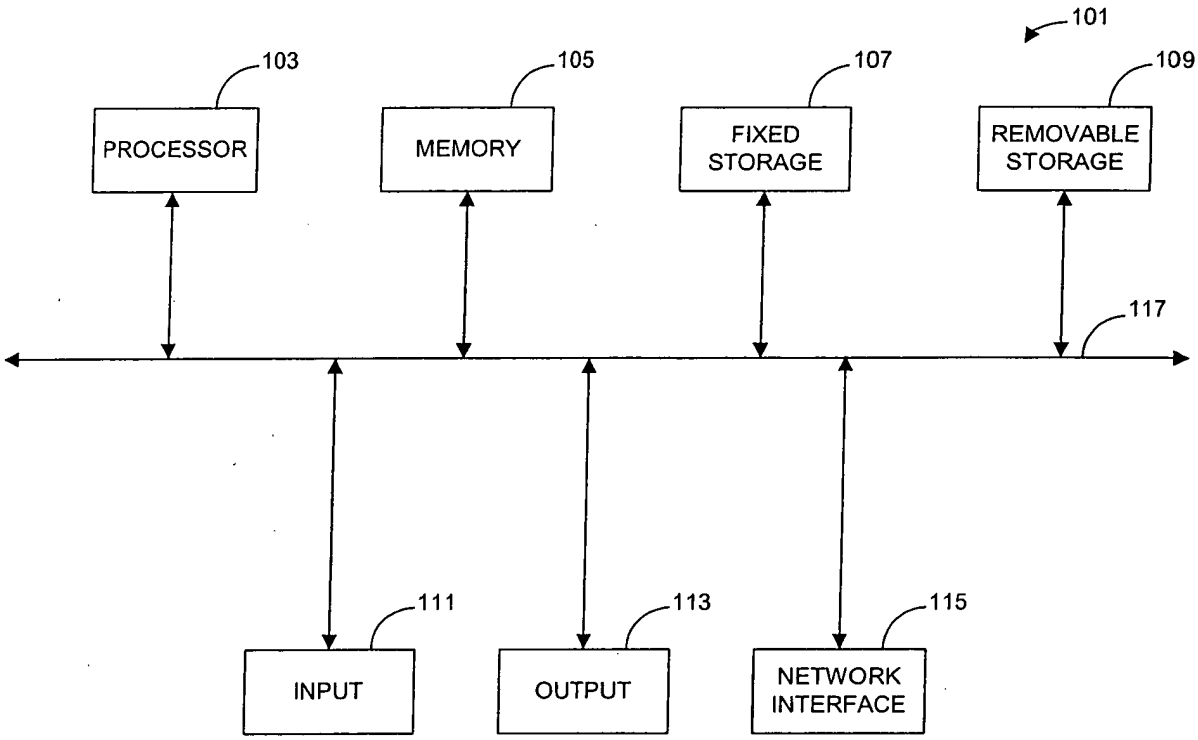

101
103
PROCESSOR
105
MEMORY
107
FIXED STORAGE
109
REMOVABLE STORAGE
117
111
INPUT
113
OUTPUT
115
NETWORK INTERFACE

FIG. 3

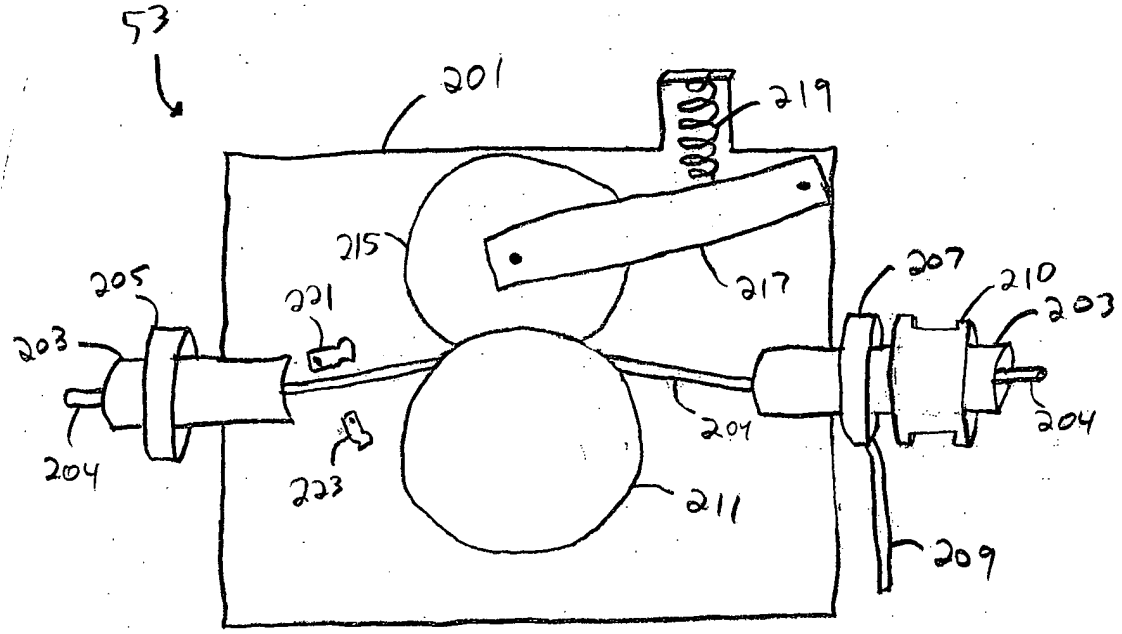

53
201
219
215
217
207
210
203
205
221
203
204
204
223
204
211
209

FIG. 4A

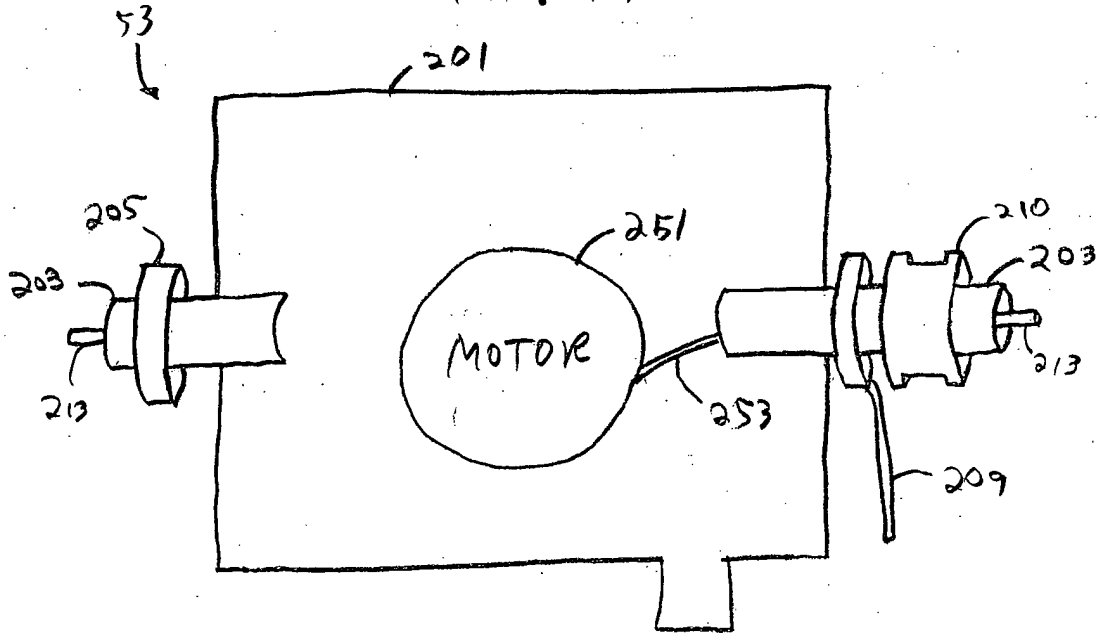

53
201
205
251
210
203
203
MOTOR
213
213
253
209

FIG. 4B

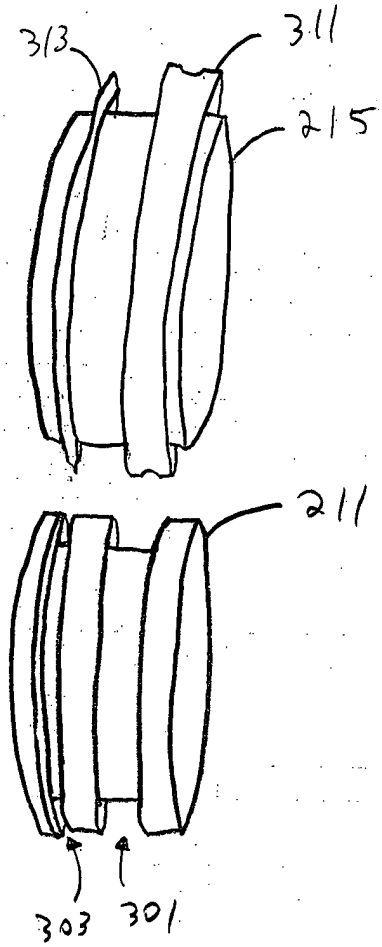


FIG. 5

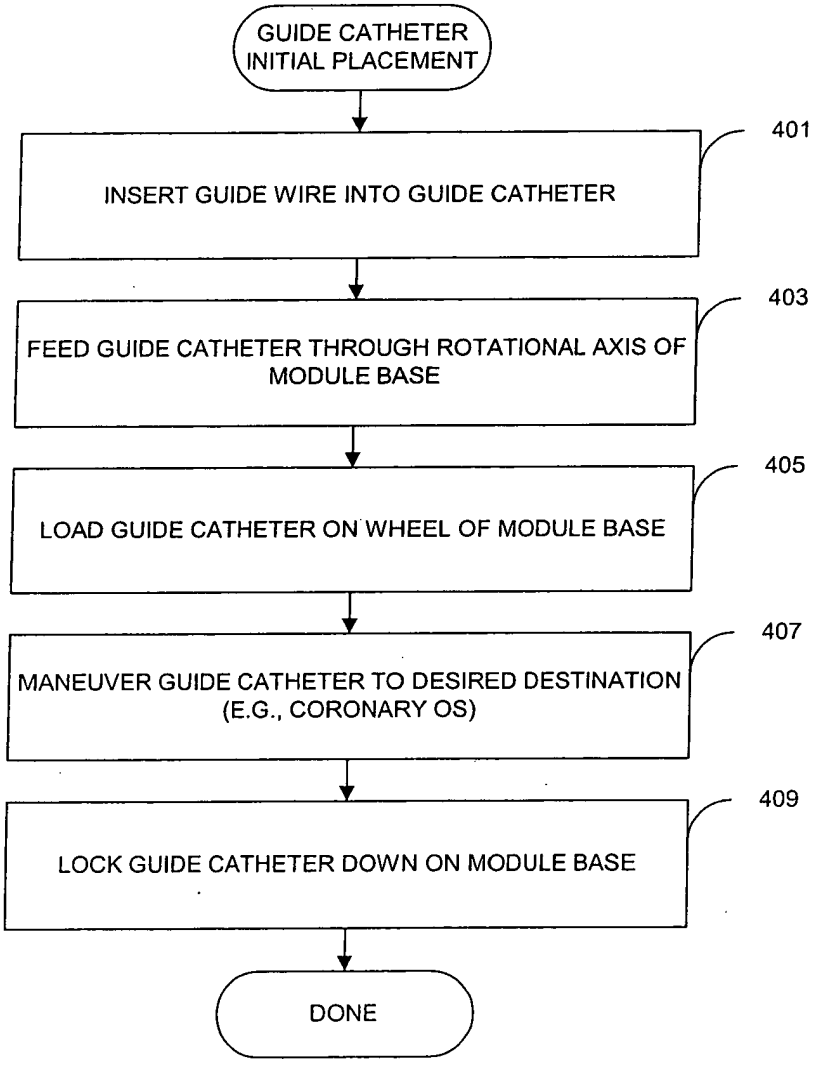

GUIDE CATHETER INITIAL PLACEMENT
401
INSERT GUIDE WIRE INTO GUIDE CATHETER
403
FEED GUIDE CATHETER THROUGH ROTATIONAL AXIS OF MODULE BASE
405
LOAD GUIDE CATHETER ON WHEEL OF MODULE BASE
407
MANEUVER GUIDE CATHETER TO DESIRED DESTINATION (E.G., CORONARY OS)
409
LOCK GUIDE CATHETER DOWN ON MODULE BASE
DONE

FIG. 6

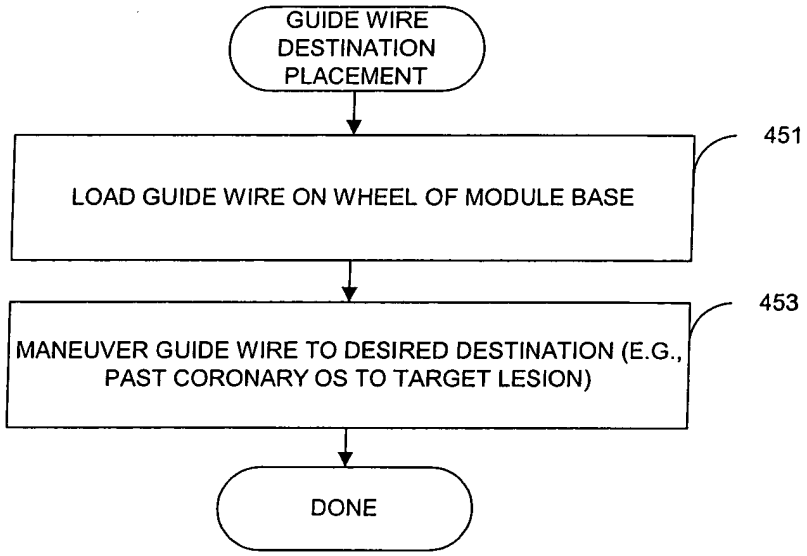

GUIDE WIRE DESTINATION PLACEMENT
451
LOAD GUIDE WIRE ON WHEEL OF MODULE BASE
453
MANEUVER GUIDE WIRE TO DESIRED DESTINATION (E.G., PAST CORONARY OS TO TARGET LESION)
DONE

FIG. 7

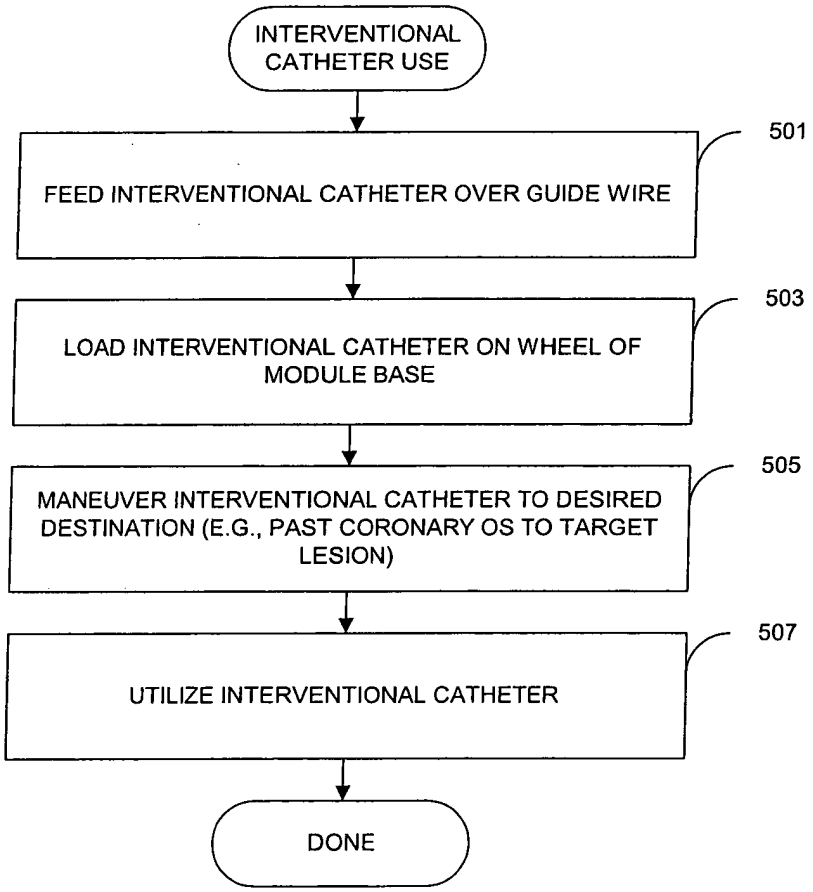

INTERVENTIONAL CATHETER USE
501
FEED INTERVENTIONAL CATHETER OVER GUIDE WIRE
503
LOAD INTERVENTIONAL CATHETER ON WHEEL OF MODULE BASE
505
MANEUVER INTERVENTIONAL CATHETER TO DESIRED DESTINATION (E.G., PAST CORONARY OS TO TARGET LESION)
507
UTILIZE INTERVENTIONAL CATHETER
DONE

FIG. 8

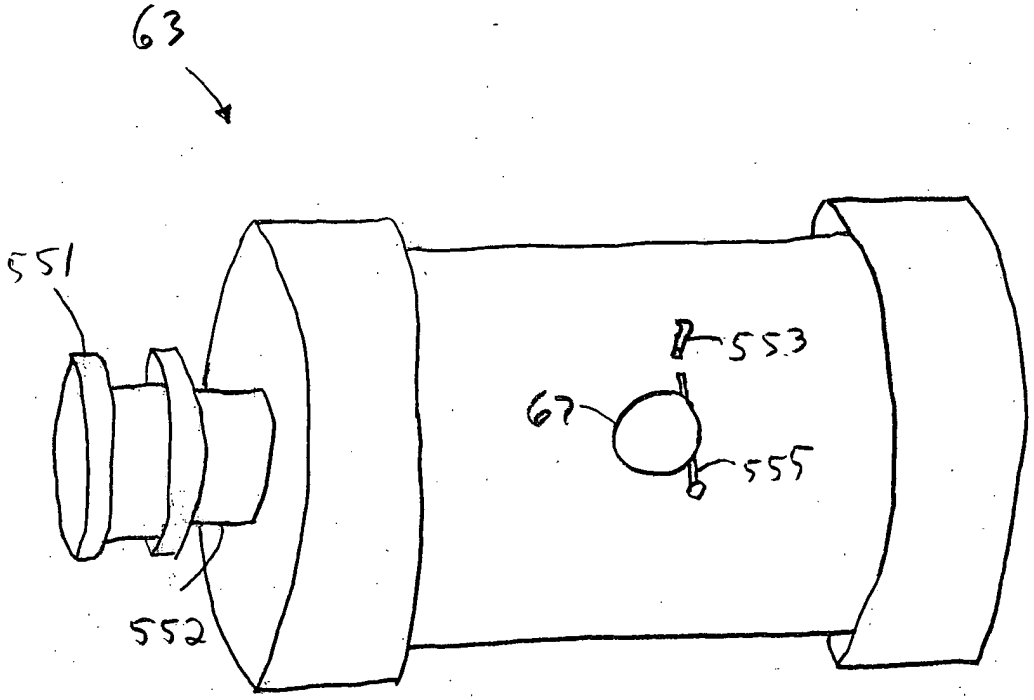


FIG. 9

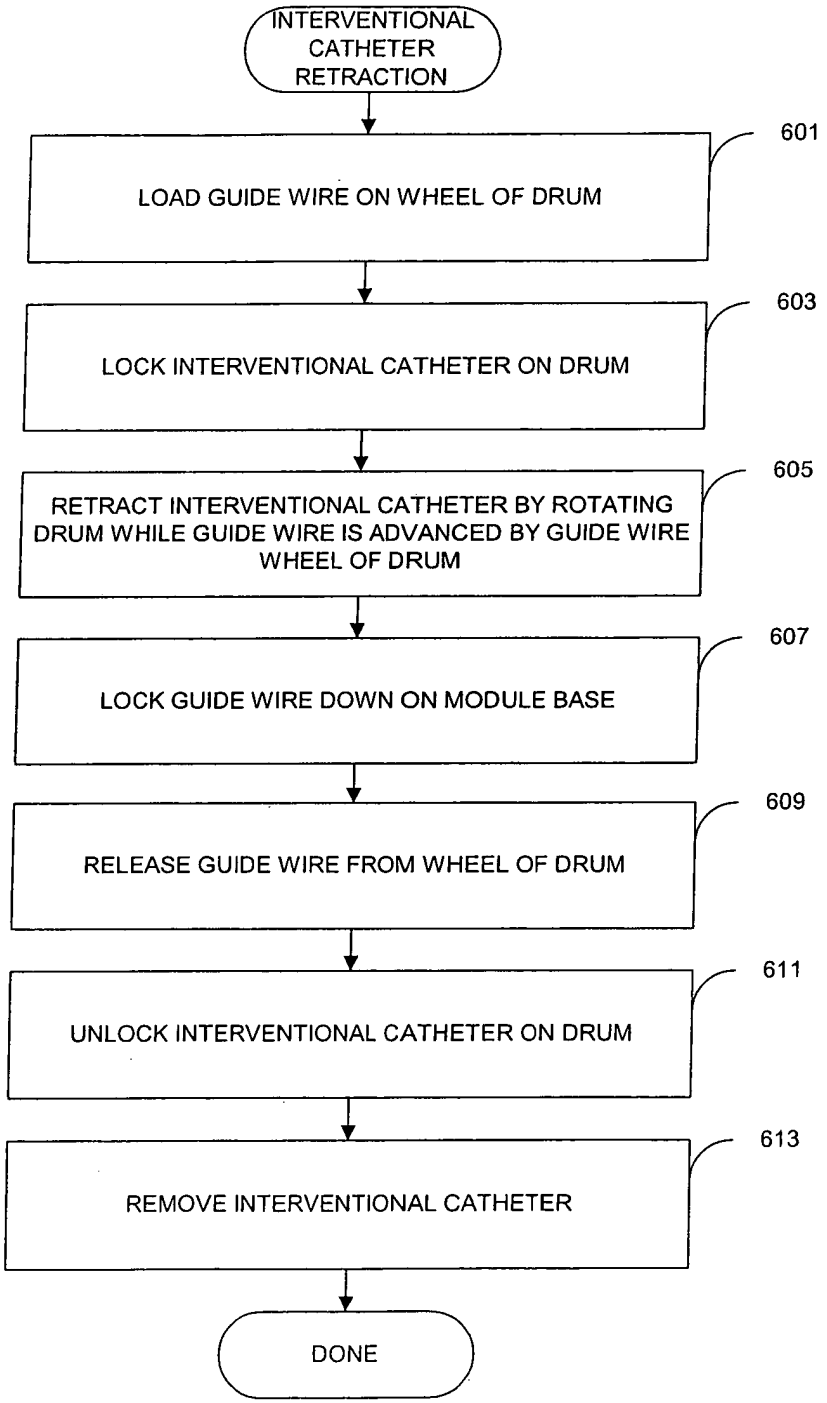

INTERVENTIONAL CATHETER RETRACTION
601
LOAD GUIDE WIRE ON WHEEL OF DRUM
603
LOCK INTERVENTIONAL CATHETER ON DRUM
605
RETRACT INTERVENTIONAL CATHETER BY ROTATING DRUM WHILE GUIDE WIRE IS ADVANCED BY GUIDE WIRE WHEEL OF DRUM
607
LOCK GUIDE WIRE DOWN ON MODULE BASE
609
RELEASE GUIDE WIRE FROM WHEEL OF DRUM
611
UNLOCK INTERVENTIONAL CATHETER ON DRUM
613
REMOVE INTERVENTIONAL CATHETER
DONE

FIG. 10

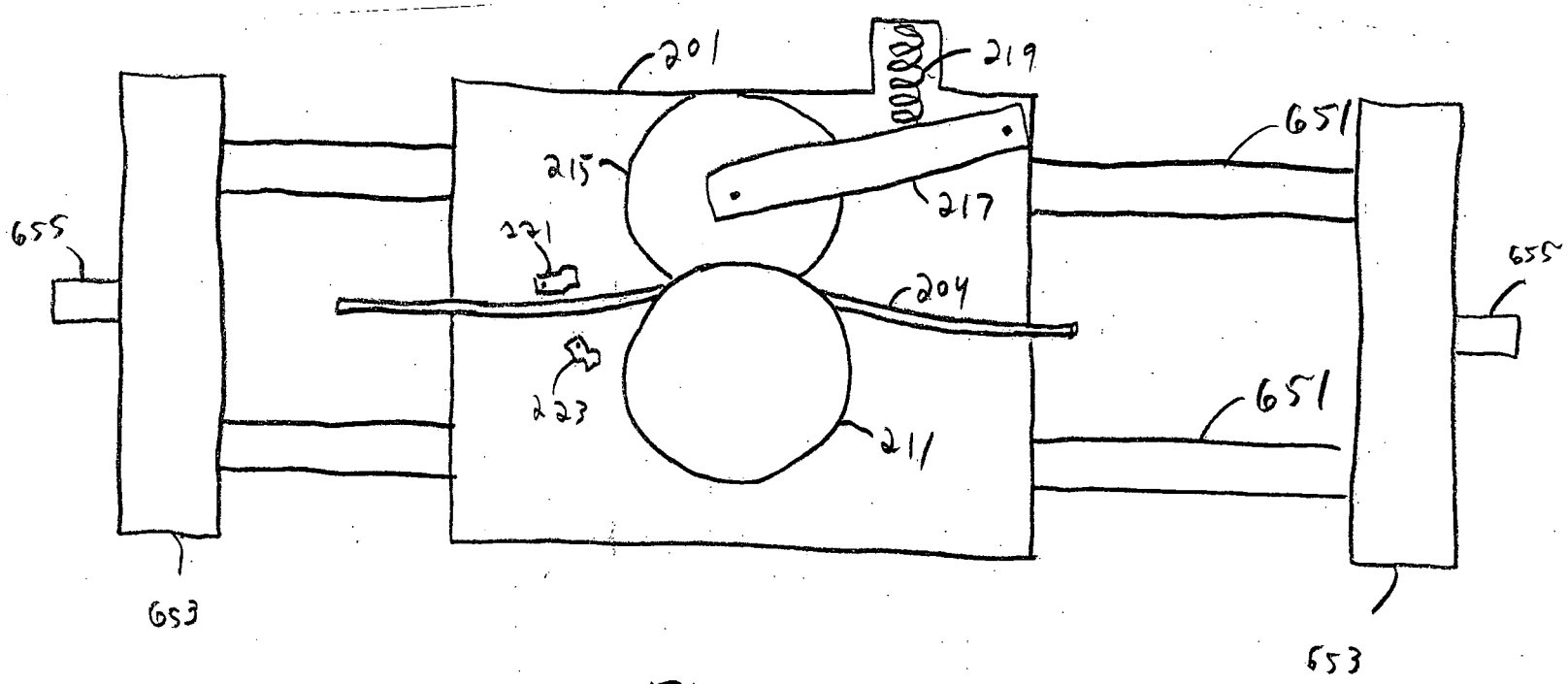


FIG. 11A

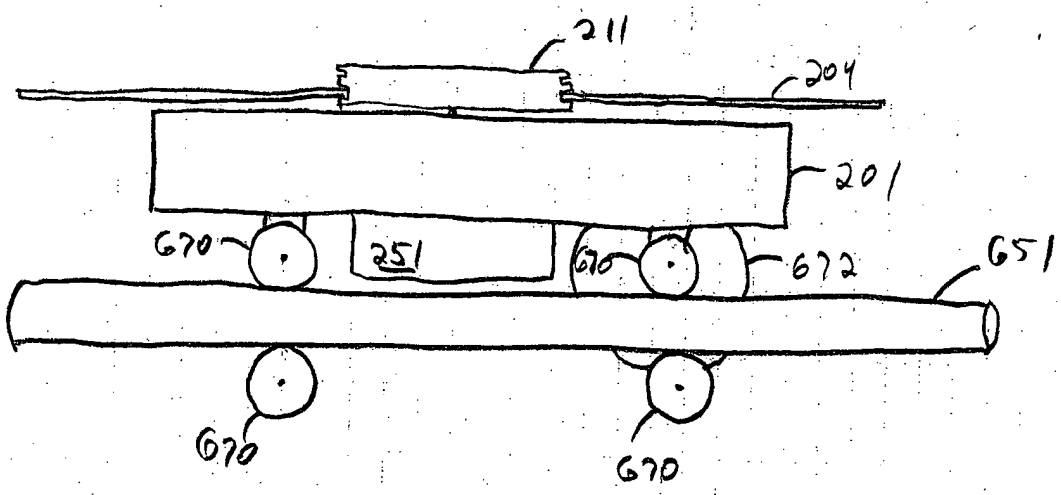


FIG. 11B

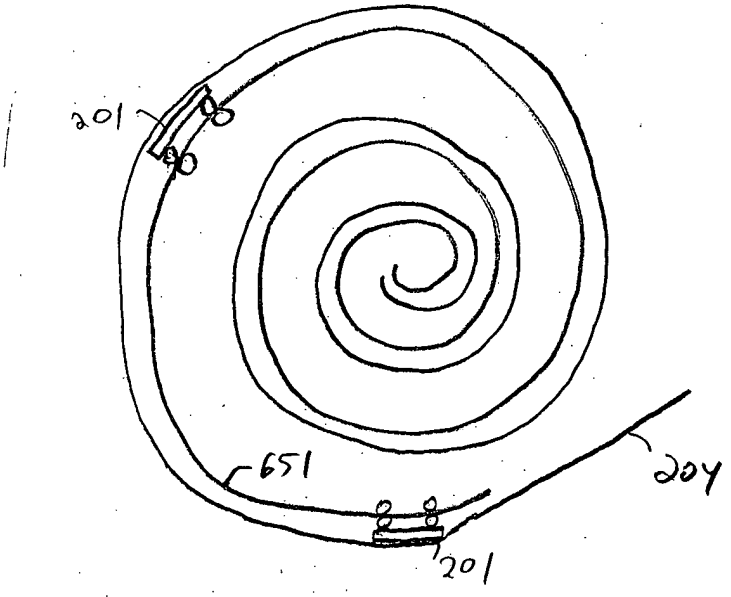


FIG. 12

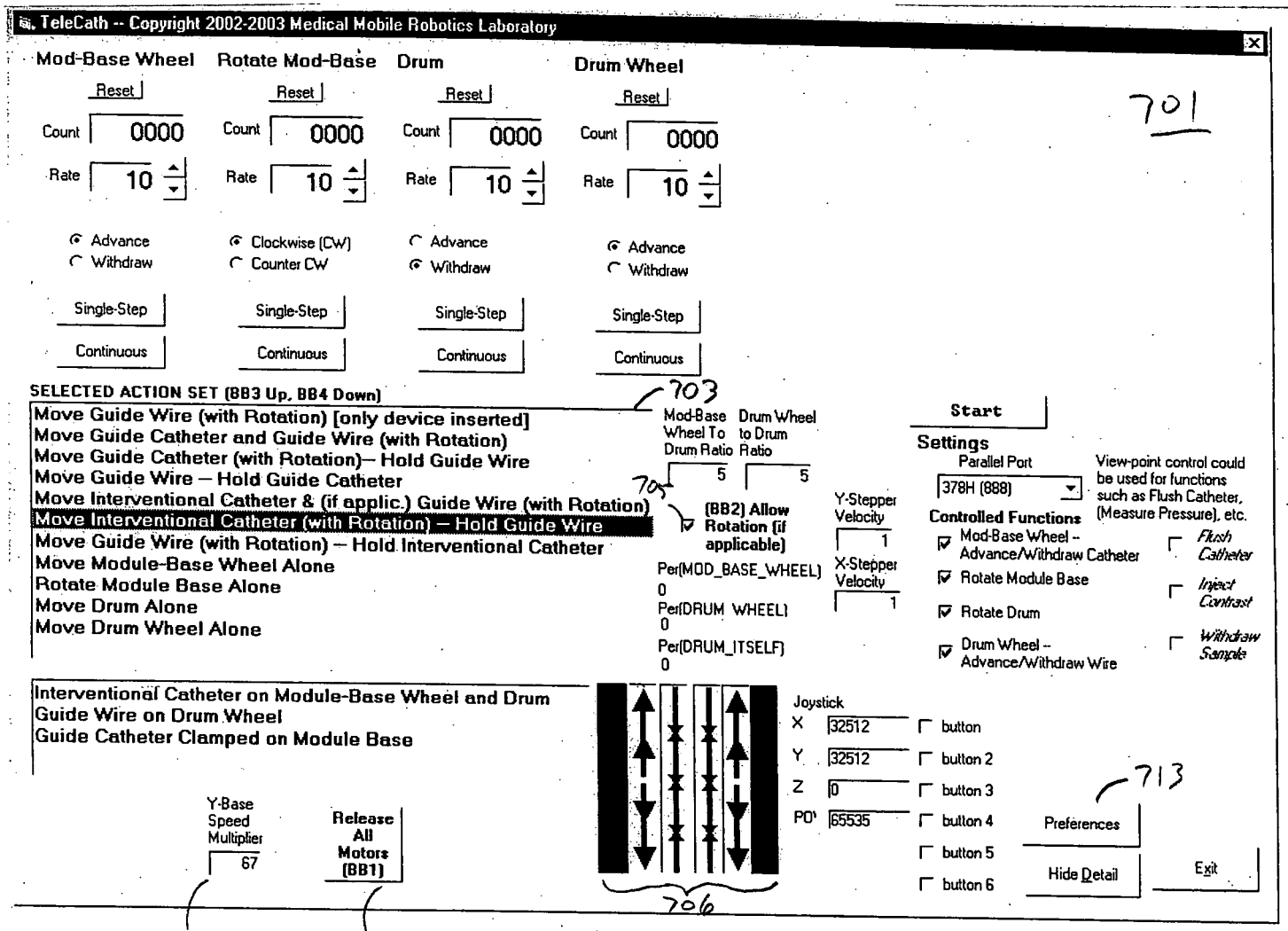

TeleCath -- Copyright 2002-2003 Medical Mobile Robotics Laboratory
Mod-Base Wheel
Rotate Mod-Base
Drum
Drum Wheel
Reset
Count 0000
Rate 10
Advance
Withdraw
Clockwise (CW)
Counter CW
Single-Step
Continuous
701
SELECTED ACTION SET (BB3 Up, BB4 Down)
703
Move Guide Wire (with Rotation) [only device inserted]
Move Guide Catheter and Guide Wire (with Rotation)
Move Guide Catheter (with Rotation)– Hold Guide Wire
Move Guide Wire – Hold Guide Catheter
Move Interventional Catheter & (if applic.) Guide Wire (with Rotation)
Move Interventional Catheter (with Rotation) – Hold Guide Wire
Move Guide Wire (with Rotation) – Hold Interventional Catheter
Move Module-Base Wheel Alone
Rotate Module Base Alone
Move Drum Alone
Move Drum Wheel Alone
Mod-Base Wheel To Drum Ratio
Drum Wheel to Drum Ratio
5
5
705
(BB2) Allow Rotation (if applicable)
Per[MOD_BASE_WHEEL]
0
Per[DRUM_WHEEL]
0
Per[DRUM_ITSELF]
0
Y-Stepper Velocity
1
X-Stepper Velocity
1
Start
Settings
Parallel Port
378H (888)
Controlled Functions
Mod-Base Wheel – Advance/Withdraw Catheter
Rotate Module Base
Rotate Drum
Drum Wheel – Advance/Withdraw Wire
View-point control could be used for functions such as Flush Catheter, (Measure Pressure), etc.
Flush Catheter
Inject Contrast
Withdraw Sample
Interventional Catheter on Module-Base Wheel and Drum
Guide Wire on Drum Wheel
Guide Catheter Clamped on Module Base
Joystick
X 32512
Y 32512
Z 0
POV 65535
button
button 2
button 3
button 4
button 5
button 6
706
713
Preferences
Hide Detail
Exit
Y-Base Speed Multiplier
67
Release All Motors (BB1)
709
711

FIG. 13